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**Deep Sequencing Reveals Novel MicroRNAs and Regulation of MicroRNA Expression during Cell Senescence.**

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**Public Summary:**

**Scientific Abstract:**

In cell senescence, cultured cells cease proliferating and acquire aberrant gene expression patterns. MicroRNAs (miRNAs) modulate gene expression through translational repression or mRNA degradation and have been implicated in senescence. We used deep sequencing to carry out a comprehensive survey of miRNA expression and involvement in cell senescence. Informatic analysis of small RNA sequence datasets from young and senescent IMR90 human fibroblasts identifies many miRNAs that are regulated (either up or down) with cell senescence. Comparison with mRNA expression profiles reveals potential mRNA targets of these senescence-regulated miRNAs. The target mRNAs are enriched for genes involved in biological processes associated with cell senescence. This result greatly extends existing information on the role of miRNAs in cell senescence and is consistent with miRNAs having a causal role in the process.

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